DrupalCon
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Project update bot: The road to Drupal 11

06 June | 11:30 EDT

BJÖRN BRALA

drupal.org/u/bbrala

Technical Director

SWIS

The Netherlands

Hi there!

- Björn Brala
- CTO @ SWIS
- Core maintainer for jsonapi
- Maintainer of project update bot
- Board member Dutch Drupal Association

bbrala

SWIS

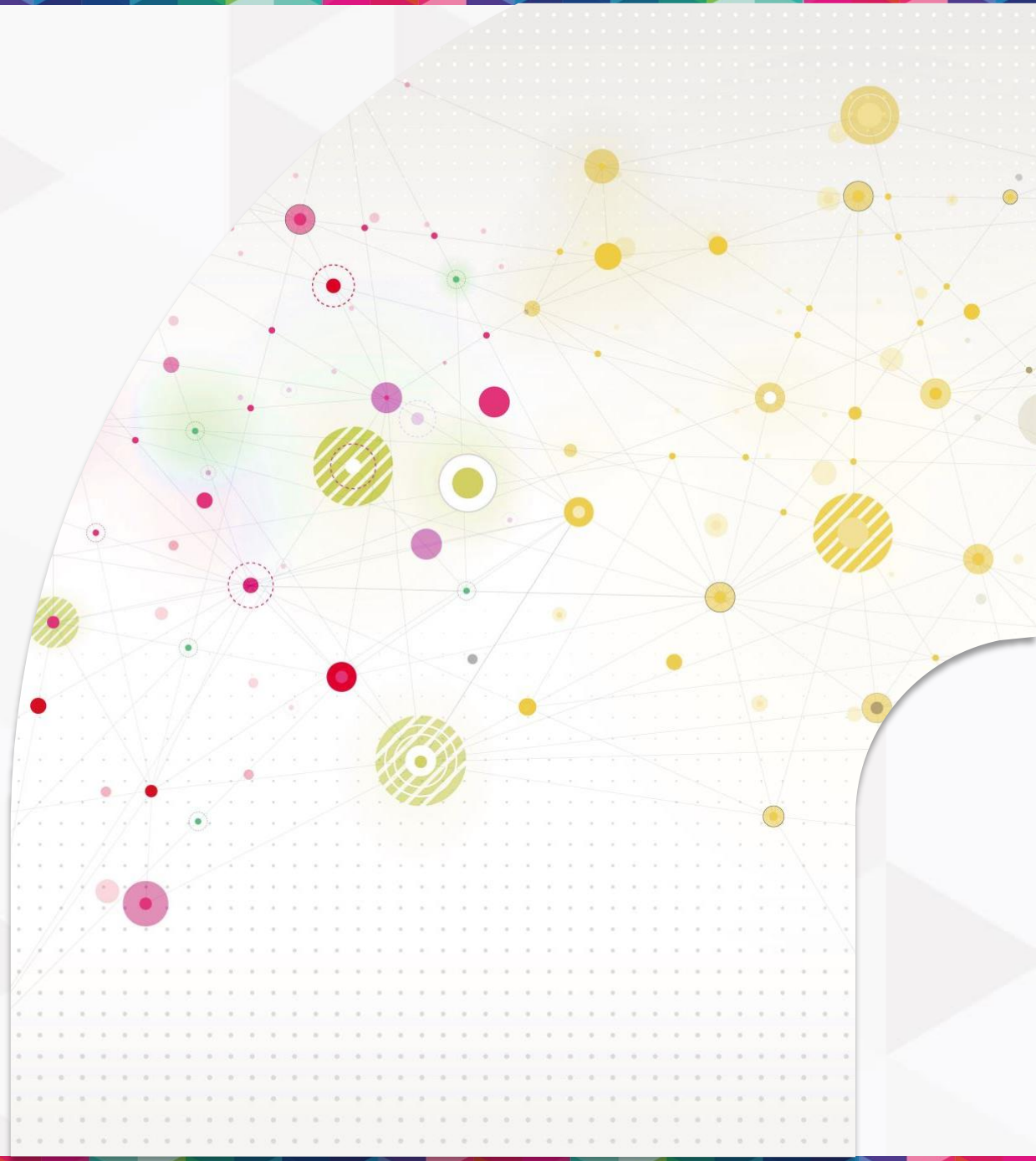
- Dutch Digital Agency from Leiden
- Sustainable digital transformations
- Non-profit, government and healthcare
- Love our automated updates

Project update bot

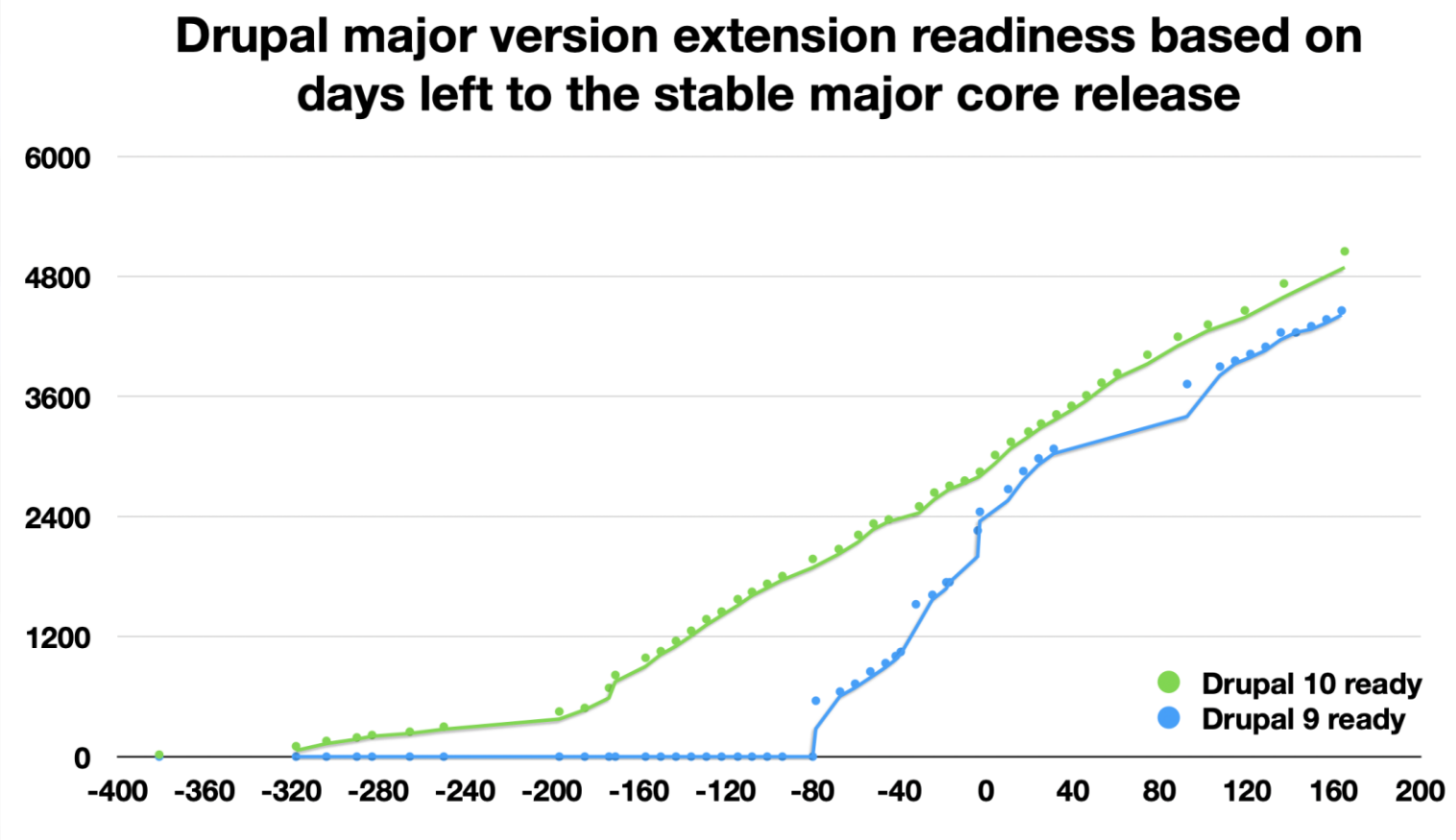
Good bot?

How did we do?

- How many modules
  - **84%** of top 1000 modules are ready or have D10 patches
- How many patches/issues posted and fixed
  - **7243 issues** opened
  - **2245** issues fixed/closed (fixed)
  - **443** RTBC



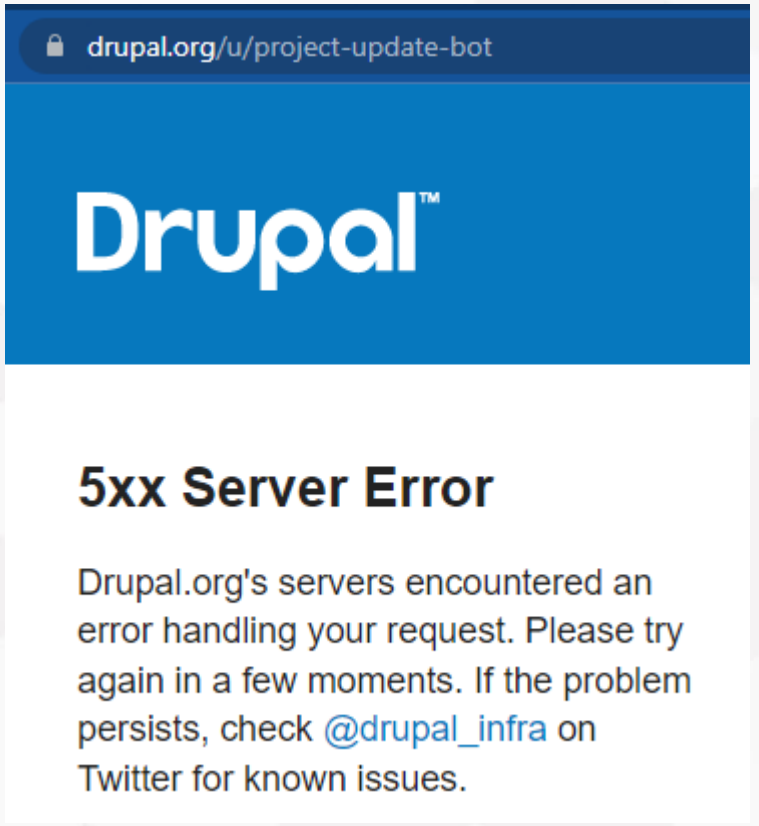
Compared to D9?



What is project update bot?

Some random guy with 4365 issue credits

u/project-update-bot



What is project update bot?

The face of project analysis, a collection of powerful tools

Tools

- PHPStan
- PHPStan Drupal
- Drupal-check
- Upgrade status
- Rector
- Drupal Rector

Projects

- Project analysis
- Project update bot
- Aquia deprecation status dashboard

PHPStan Drupal

- **PHP st**atic **an**alysis tool
- Finds bugs in your code without writing tests.
- Finds usages of deprecated code
- https://phpstan.org/
- Extension for PHPStan to integrate with Drupal

mglaman/phpstan-drupal

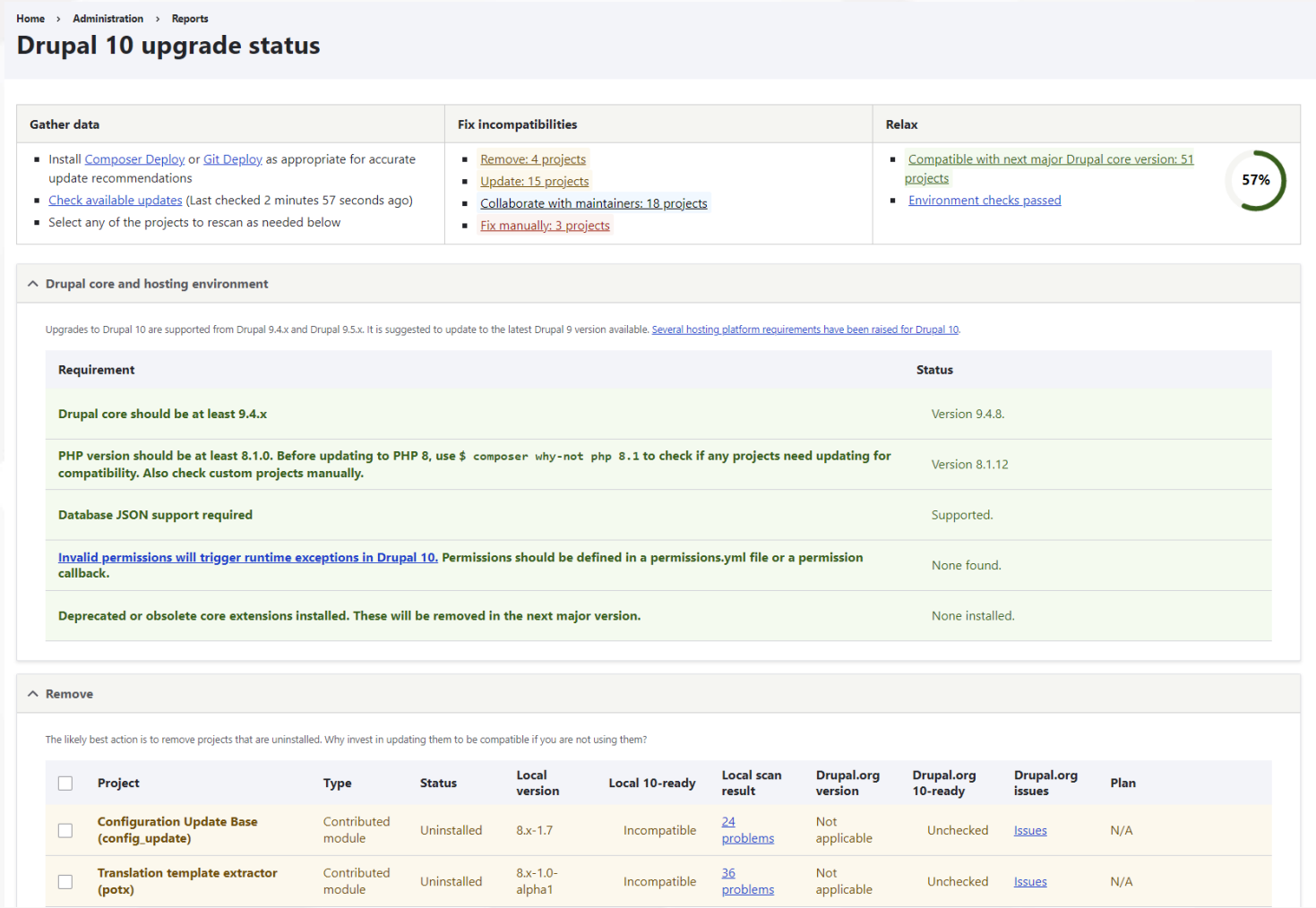
Drupal check

- Wrapper around PHPStan and phpstan-drupal to simplify configuration

mglaman/drupal-check

Upgrade status

- Interface to analyze readiness for next major Drupal release



project/upgrade_status

Rector

We Turn Legacy Code into Valuable and Sustainable Code

- Tooling to refactor code automatically
  - Support new PHP versions
  - Refactor classes, methods, arguments
  - And way more...

rectorphp/rector

Rector

Adding a new argument

```php
use PHPStan\Type\ObjectType;
use Rector\Arguments\Rector\ClassMethod\ArgumentAdderRector;
use Rector\Arguments\ValueObject\ArgumentAdder;
use Rector\Config\RectorConfig;

return static function (RectorConfig $rectorConfig): void {
    $rectorConfig->ruleWithConfiguration(
        ArgumentAdderRector::class,
        [new ArgumentAdder('SomeExampleClass', 'someMethod', 0, 'someArgument', true, new ObjectType('SomeType'))]
    );
};
```

rectorphp/rector

Rector

Adding a new argument

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use PHPStan\Type\ObjectType;
use Rector\Arguments\Rector\ClassMethod\ArgumentAdderRector;
use Rector\Arguments\ValueObject\ArgumentAdder;
use Rector\Config\RectorConfig;

return static function (RectorConfig $rectorConfig): void {
    $rectorConfig->ruleWithConfiguration(
        ArgumentAdderRector::class,
        [new ArgumentAdder('SomeExampleClass', 'someMethod', 0, 'someArgument', true, new ObjectType('SomeType'))]
    );
};
```

```
 $someObject = new SomeExampleClass;
-$someObject->someMethod();
+$someObject->someMethod(true);

 class MyCustomClass extends SomeExampleClass
 {
-    public function someMethod()
+    public function someMethod($value = true)
     {
     }
 }
```

rectorphp/rector

Drupal Rector

Using the power of Rector to automate fixing deprecations

palantirnet/drupal-rector

Drupal Rector

Using the power of Rector to automate fixing deprecations

- A set of deprecations for Drupal
- Automated fixes where possible

palantirnet/drupal-rector

What is project update bot?

The face of project analysis, a collection of powerful tools

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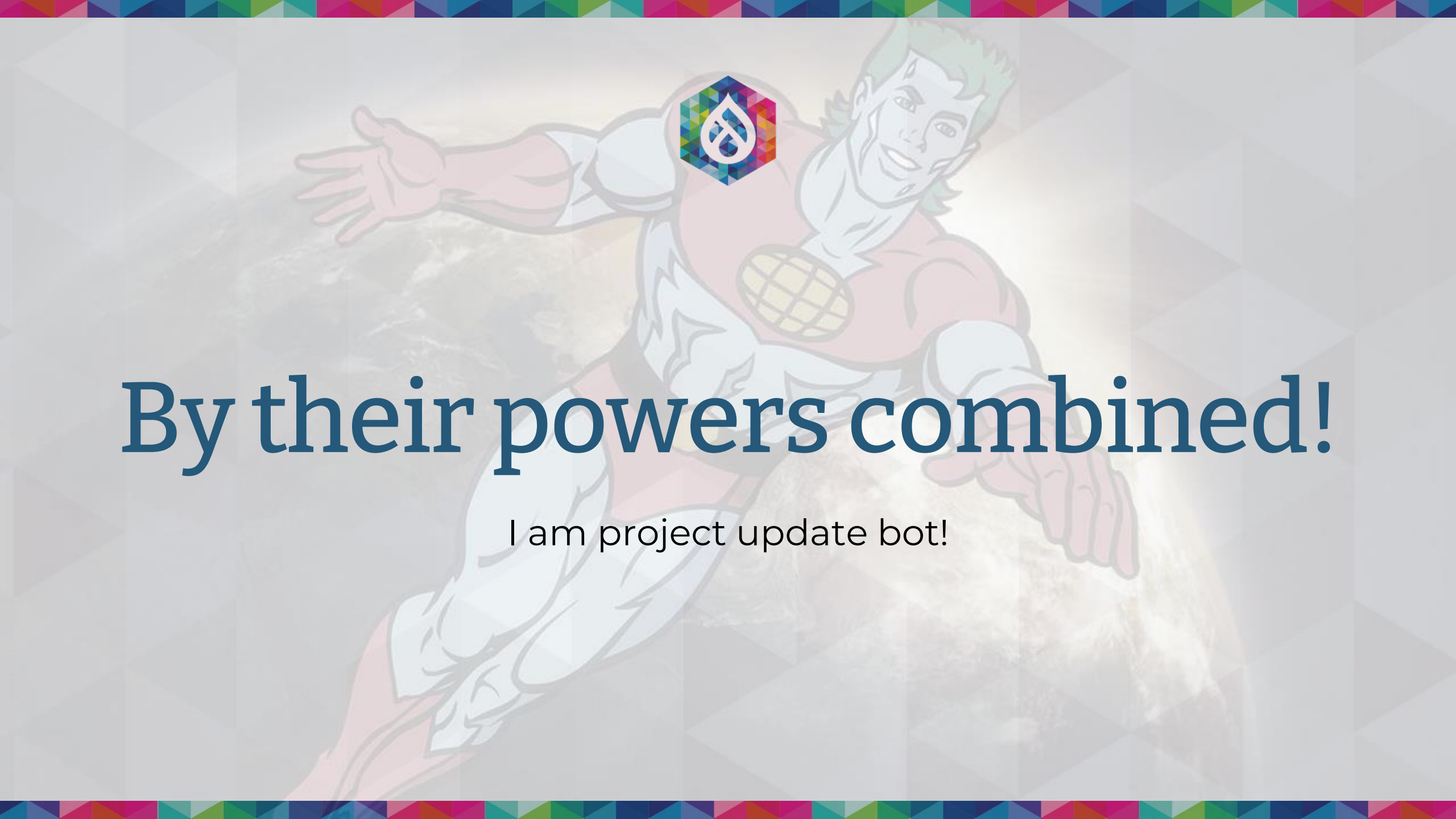
- Drupal Rector

Projects

- Project analysis
- Project update bot
- Aquia deprecation status dashboard



By their powers combined!

I am project update bot!

Project analysis

Automating data collection and patch generation

- Why automation is important
- What does it do?
- The process

Why automation is important

Automation is driving the decline of banal and repetitive tasks.

- Drupal needs modules
- A lot of modules are very simple to upgrade
- Upgrade with minimal effort

What does it do?

Project analysis in a nutshell

- Scripts to install, check and patch modules
- Analyses all drupal.org projects
- Create patches from updated code
- Store the analysis results for other tools
- Runs on GitLab runners!

project/project_analysis

What does it do?

Project analysis in a nutshell

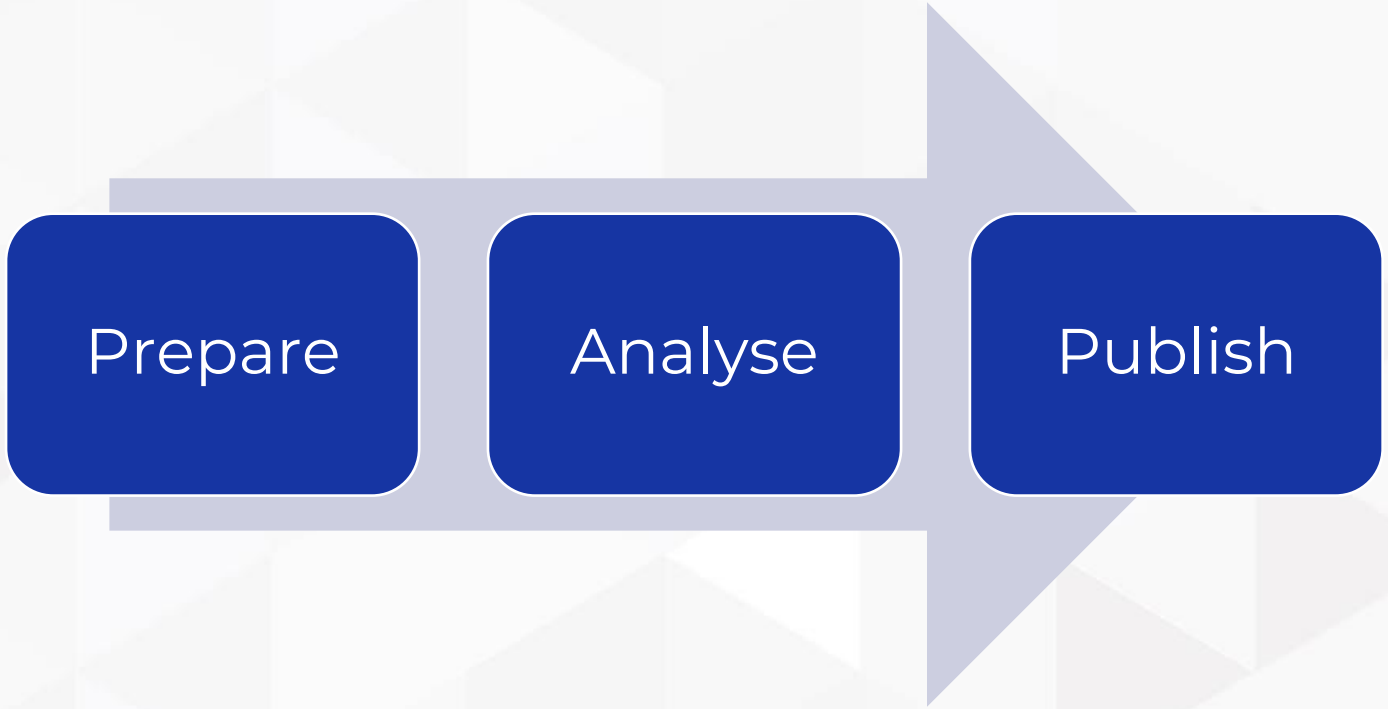
- Runs on **GitLab runners**
- 3-hour runtime
- Processes about **10.000 projects**
- Split to 50 separate jobs as parallel as possible

- Broke ***git.drupal.org*** a few times. Sorry :x

project/project_analysis

Let's go through the process

How does the analysis work?



Let's go through the process

Analysing a single project

1. Install and enable the project
2. Run **`drush upgrade_status:checkstyle [module]`** and store XML output
3. Should we **run rector** to fix the module?

```
<?xml version="1.0"?>
<checkstyle>
  <file name="modules/contrib/quiz_item_analysis/src/Controller/QuizItemAnalysisController.php">
    <error line="435" message="Call to deprecated method queryTemporary() of class Drupal\Core\Database\Connection. Deprecated
    in drupal:9.3.0 and is removed from drupal:10.0.0. There is no replacement." severity="warning"/>
  </file>
  <file name="modules/contrib/quiz_item_analysis/quiz_item_analysis.info.yml">
    <error line="0" message="Value of core_version_requirement: ^8 || ^9 is not compatible with the next major version of
    Drupal core. See https://drupal.org/node/3070687." severity="error"/>
  </file>
</checkstyle>
```

Let's go through the process

Analysing a single project

1. Install and enable the project
2. Run `drush upgrade_status:checkstyle [module]` and store XML output
3. Should we **run rector** to fix the module?
4. If so; **commit** the project
5. Run **rector** to fix deprecations and store the output

Let's go through the process

Analysing a single project

```
diff --git a/jsonapi_image_styles.2.0.x-dev.upgrade_status.pre_rector.xml b/jsonapi_image_styles.2.0.x-dev.upgrade_status.post_rector.xml
index 50886668c..76f219ec8 100644
--- a/jsonapi_image_styles.2.0.x-dev.upgrade_status.pre_rector.xml
+++ b/jsonapi_image_styles.2.0.x-dev.upgrade_status.post_rector.xml
@@ -1,13 +1,10 @@
 <?xml version="1.0"?>
 <checkstyle>
-    <file name="modules/contrib/jsonapi_image_styles/src/EventSubscriber/ConfigSubscriber.php">
-        <error line="32" message="Parameter $event of method Drupal\jsonapi_image_styles\EventSubscriber\ConfigSubscriber::onResponse() has typehint with deprecated class Symfony\Component\HttpKernel\Event\FilterResponseEvent: since Symfony 4.3, use ResponseEvent instead" severity="error"/>
-    </file>
     <file name="modules/contrib/jsonapi_image_styles/jsonapi_image_styles.info.yml">
         <error line="0" message="Value of core_version_requirement: ^8.8 || ^9 is not compatible with the next major version of Drupal core. See https://drupal.org/node/3070687." severity="error"/>
     </file>
     <file name="modules/contrib/jsonapi_image_styles/composer.json">
         <error line="0" message="The drupal/core requirement is not compatible with the next major version of Drupal. Either remove it or update it to be compatible. See https://drupal.org/node/2514612#s-drupal-9-compatibility." severity="error"/>
     </file>
 </checkstyle>
```

8. If so; create the **patch**!

Let's go through..

Analysing a single project

- If so; create the **patch**!
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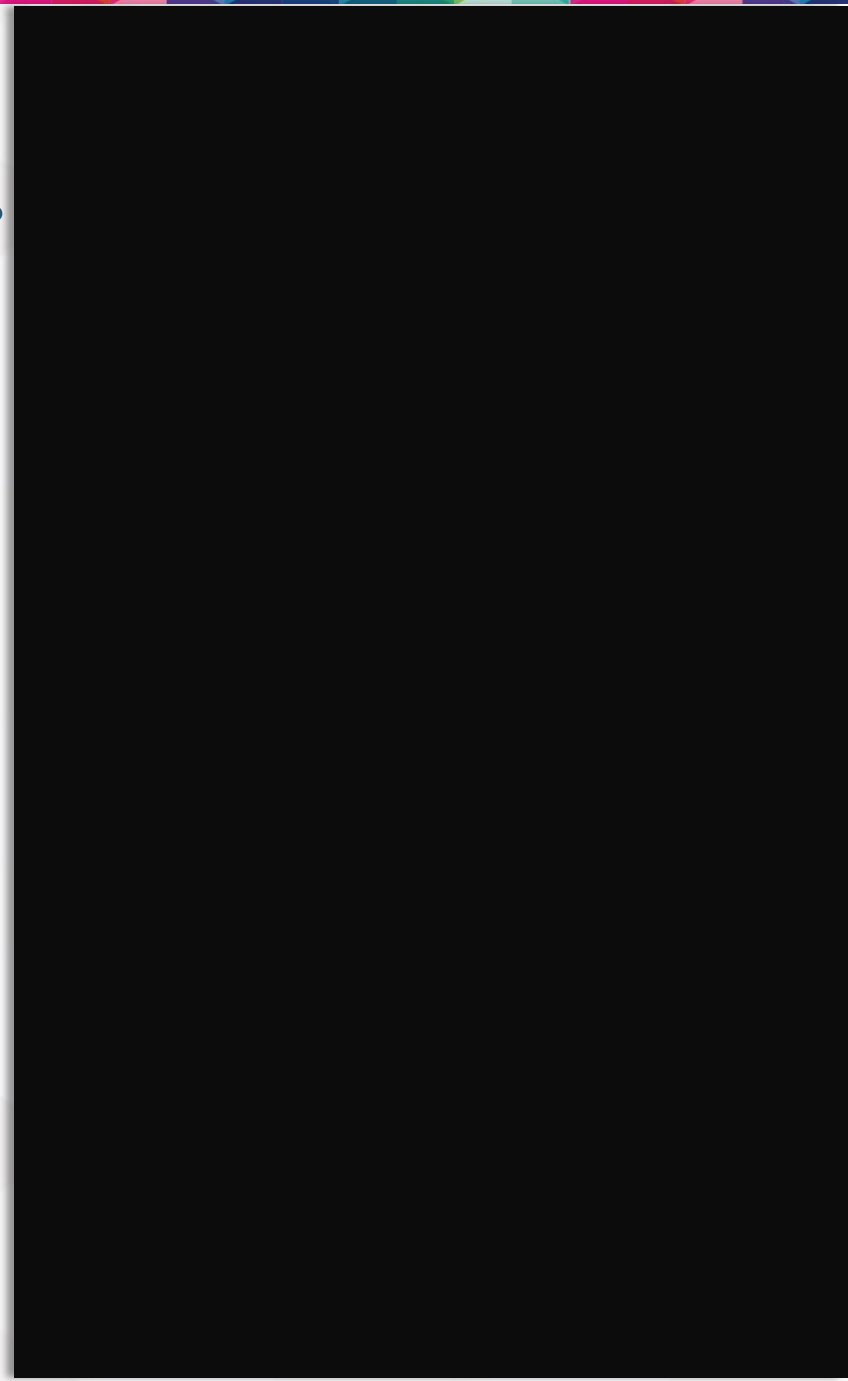


Let's go through the process

Publishing the results

1. All results are **stored as artifacts** in Gitlab
2. A job **combines** all **artifacts** to a single directory
3. Artifacts are **committed** to an orphan 'results' branch

https://git.drupalcode.org/project/project_analysis/-/tree/results

Extracting value from data

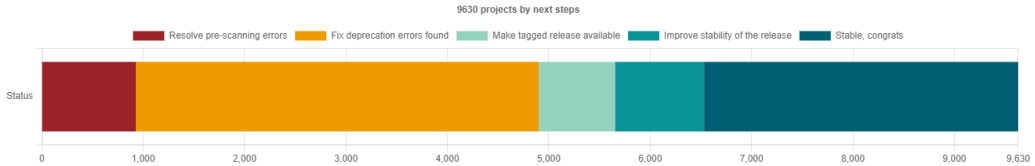
Using all this work for good

Drupal 10 deprecation status

Drupal 10 deprecation status summary

Summary | Projects | Errors | Charts

The Drupal Association is running a report weekly on all Drupal 9 compatible contributed projects to check for deprecated API uses for compatibility with Drupal 10. This summary and the detail pages are using the raw data from that report to help act on the results. The current displayed dataset is #11078 from 2023-04-30T17:36. All the (very, very) raw source data is available. Out of the **9630 projects analyzed**, there are three big categories of results: pre-scanning problems that prevent us from looking for deprecated API uses; scanning results and project release status once the code is marked compatible.



Fix deprecation errors found: 3973 projects

Projects that have deprecation checking results with errors to fix. These could still include parse errors found in the process of deprecation checking, but most of the errors found are real deprecated API uses. We further segment these errors into Drupal and not Drupal deprecated API uses. Most of the Drupal ones are even covered by drupal-rector automation (thanks to Palantir.net funding) to fix them automatically as much as possible. There are also a number of third party API deprecations, some of which we segment out for easier tracking. Use Upgrade Status locally to verify your progress fixing these problems.

Make tagged release available: 752 projects

Now that a development branch of this project is compatible with Drupal 10, the next step is to tag an alpha/beta/RC or stable version of the project, depending on maintainer confidence in the stability of the codebase. This allows people to use a specific known compatible version of the project.

Improve stability of the release: 879 projects

The project has a tagged release for Drupal 10 which is great. Depending on maintainer confidence about stability of the codebase, the next step is to make a stable (not alpha/beta/RC) release available for this project.

Stable, congrats: 3098 projects

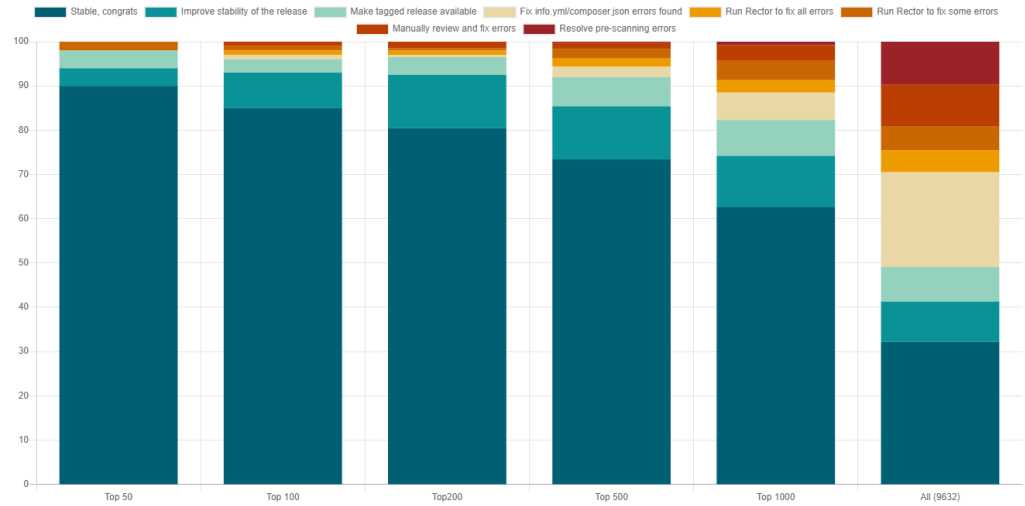
The project is not only declared compatible with Drupal 10 but even has a stable release with that compatibility. Congrats and thanks to the maintainers and contributors!

Drupal 10 deprecation charts

Summary | Projects | Errors | Charts

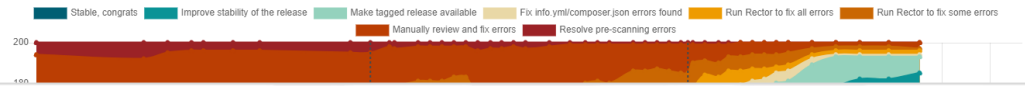
Percentage of contributed projects by next step in usage groups

Larger groups include results for smaller usage groups.



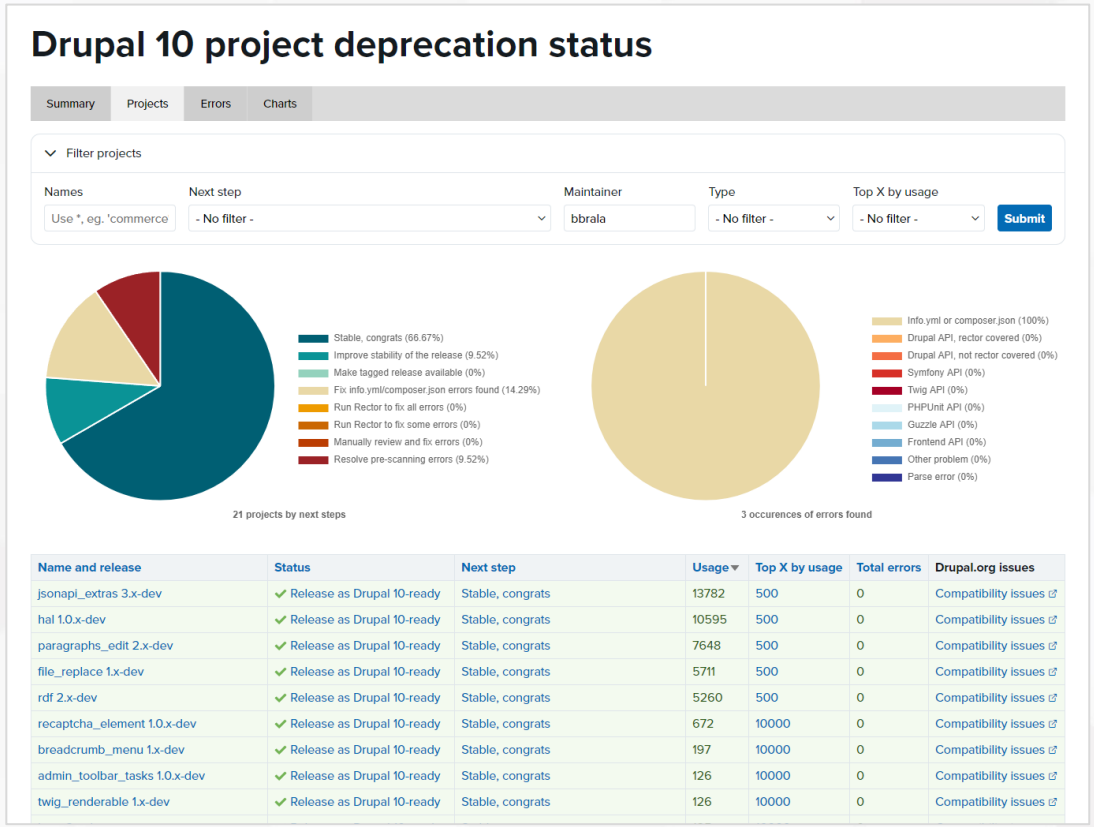
Top 200 drupal.org contributed projects by next step over time

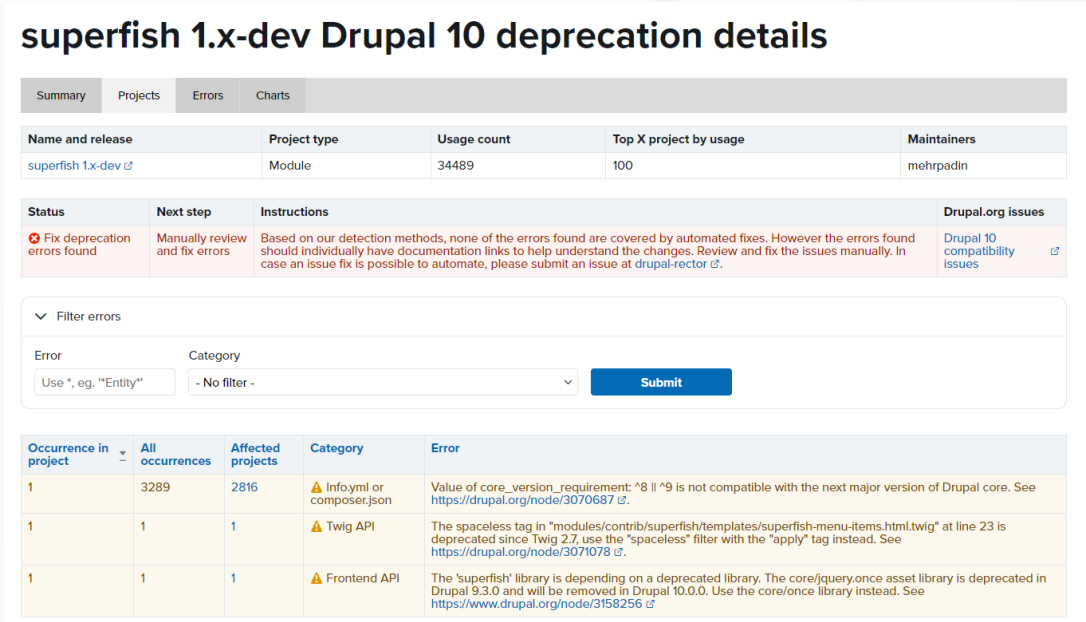
Projects have errors that can be automatically fixed with drupal-rector.



https://dev.acquia.com/drupal10/deprecation_status

Drupal 10 deprecation status

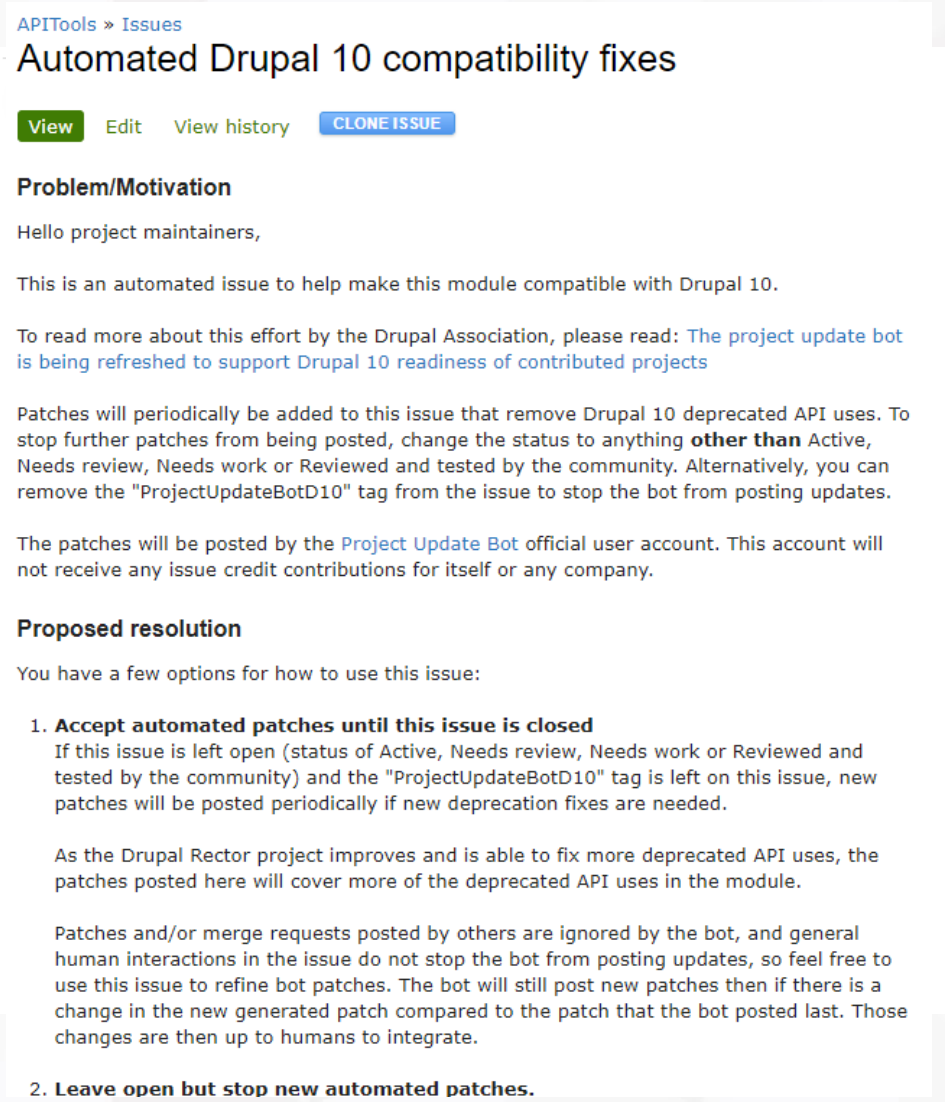




https://dev.acquia.com/drupal10/deprecation_status

Project update bot

- Super **secret private repository** (sorry)
- Issue templates from **project/project_analysis**
- **Analyses** results and posts new patches



APITools » Issues

Automated Drupal 10 compatibility fixes

View Edit View history CLONE ISSUE

Problem/Motivation

Hello project maintainers,

This is an automated issue to help make this module compatible with Drupal 10.

To read more about this effort by the Drupal Association, please read: The project update bot is being refreshed to support Drupal 10 readiness of contributed projects

Patches will periodically be added to this issue that remove Drupal 10 deprecated API uses. To stop further patches from being posted, change the status to anything **other than** Active, Needs review, Needs work or Reviewed and tested by the community. Alternatively, you can remove the "ProjectUpdateBotD10" tag from the issue to stop the bot from posting updates.

The patches will be posted by the Project Update Bot official user account. This account will not receive any issue credit contributions for itself or any company.

Proposed resolution

You have a few options for how to use this issue:

1. **Accept automated patches until this issue is closed**
   If this issue is left open (status of Active, Needs review, Needs work or Reviewed and tested by the community) and the "ProjectUpdateBotD10" tag is left on this issue, new patches will be posted periodically if new deprecation fixes are needed.

   As the Drupal Rector project improves and is able to fix more deprecated API uses, the patches posted here will cover more of the deprecated API uses in the module.

   Patches and/or merge requests posted by others are ignored by the bot, and general human interactions in the issue do not stop the bot from posting updates, so feel free to use this issue to refine bot patches. The bot will still post new patches then if there is a change in the new generated patch compared to the patch that the bot posted last. Those changes are then up to humans to integrate.

2. **Leave open but stop new automated patches.**

u/project-update-bot

Drupal 11

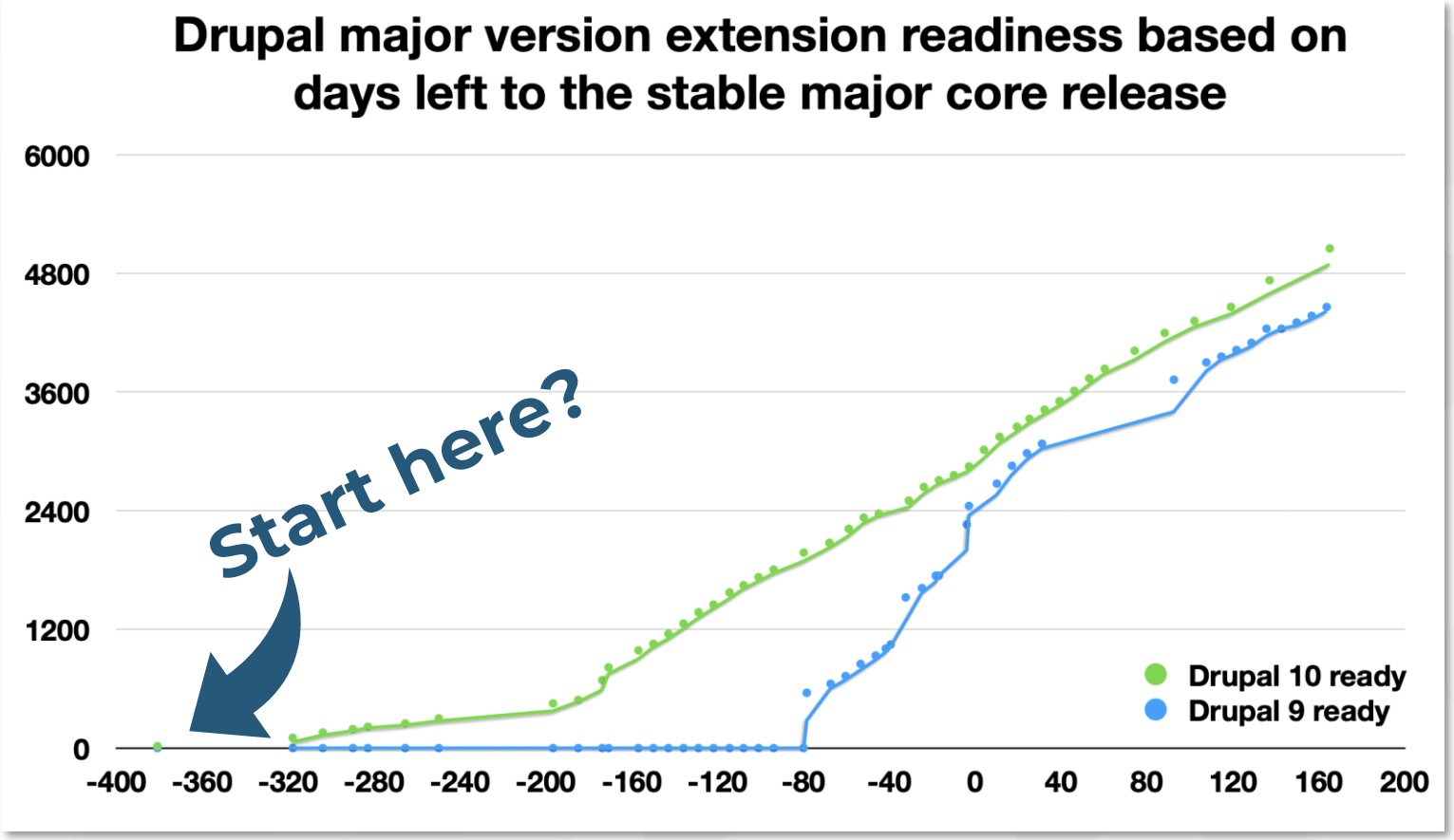
Creating a maintainable pace

Drupal 11

Help modules fix deprecations throughout Drupal 10

- It has been **a rough ride** for contrib and tooling maintainers alike
- Break **backwards compatibility** in patches is a bad idea™
- Successfully **decoupled from D.A.** infra team
- We should **start earlier** helping maintainers

Drupal 11?


Drupal major version extension readiness based on days left to the stable major core release
6000
4800
3600
2400
1200
0
-400
-360
-320
-280
-240
-200
-160
-120
-80
-40
0
40
80
120
160
200
Start here?
Drupal 10 ready
Drupal 9 ready

Road to Drupal 11

Fully utilize Gitlab

Track deprecations

Backwards compatible fixes

Utilizing Gitlab

Fully utilize Gitlab

- Utilize **Gitlab templates** to enable opt-in to frequent updates
- Use **merge requests** instead of patches
- Use **Gitlab issues** when available
- **Move** the **project update bot** to Gitlab?

project/gitlab_templates

Utilizing Gitlab

Fully utilize Gitlab

- Utilize **Gitlab templates** to enable opt-in to frequent updates

```
include:
  ################
  # DrupalCI includes:
  # As long as you include this, any future includes added by the Drupal Association wil
automatically.
  # View these include files at https://git.drupalcode.org/project/gitlab_templates/
  ################
  - project: $_GITLAB_TEMPLATES_REPO
    ref: $_GITLAB_TEMPLATES_REF
    file:
      - '/includes/include.drupalci.main.yml'
      - '/includes/include.drupalci.variables.yml'
      - '/includes/include.drupalci.workflows.yml'
```

project/gitlab_templates

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Fully utilize Gitlab

- Utilize **Gitlab templates** to enable opt-in to frequent updates

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  ################
  # DrupalCI includes:
  # As long as you include this, any future includes added by the Drupal Association wil
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  # View these include files at https://git.drupalcode.org/project/gitlab_templates/
  ################
  - project: $_GITLAB_TEMPLATES_REPO
    ref: $_GITLAB_TEMPLATES_REF
    file:
      - '/includes/include.drupalci.main.yml'
      - '/includes/include.drupalci.variables.yml'
      - '/includes/include.drupalci.workflows.yml'

variables:
  PROJECT_UPDATE_BOT_MONTHLY: '1'
```

project/gitlab_templates

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project/gitlab_templates

Utilizing Gitlab

Fully utilize Gitlab

- Utilize **Gitlab templates** to enable opt-in to frequent updates
- Use **merge requests** instead of patches

```
git push -o merge_request.create
```

Push options for merge requests

You can use Git push options to perform certain actions for merge requests at the same time as pushing changes:

Push option	Description	Introduced in version
`merge_request.create`	Create a new merge request for the pushed branch.	11.10

project/gitlab_templates

Utilizing Gitlab

Fully utilize Gitlab

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- Use **merge requests** instead of patches
- Use **Gitlab issues** when available
- **Move** the **project update bot** to Gitlab?

project/gitlab_templates

Road to Drupal 11

Fully utilize Gitlab

Track deprecations

Backwards compatible fixes

The automated fixes pipeline

Track deprecations

From the viewpoint of a human

- Track **new deprecations**
- Create relevant **issues** in tooling (up to 5 projects!)
- **Update tooling** to support the deprecation
- **Release** new versions and **run project analysis**
- Post new patches/merge requests with **project update bot**
- ...
- **Profit**

mglaman/drupal-change-record-triage

Drupal change record triage

Track deprecations

- **Create issues** for new deprecations
- Manually **label the tools** that are affected
- **Track progress** of those changes

mglaman/drupal-change-record-triage

Road to Drupal 11

Fully utilize Gitlab

Track deprecations

Backwards compatible fixes

Backwards compatible fixes

Patches that work during the Drupal 10 lifecycle

What does BC bring?

Backwards compatible fixes

- Module **bad_bot**:
  - **1.4.x** supports Drupal **^10.2**
  - **1.5.x** supports Drupal **^11.0**
- Module **good_bot**
  - **1.x** supports Drupal **^10.2 || ^11.0**

What does BC bring?

Backwards compatible fixes

```
./composer.json has been updated
Running composer update drupal/core-recommended drupal/core-composer-scaffold
drupal/core-project-message composer/installers --with-all-dependencies
Gathering patches for root package.
Loading composer repositories with package information
Updating dependencies
Your requirements could not be resolved to an installable set of packages.

  Problem 1
    - drupal/core-recommended 10.0.x-dev requires drupal/core 10.0.x-dev -> found
drupal/core[10.0.x-dev] but these were not loaded, likely because it conflicts with
another require.
    - drupal/core-recommended 10.1.x-dev requires drupal/core 10.1.x-dev -> found
drupal/core[10.1.x-dev] but these were not loaded, likely because it conflicts with
another require.
    - drupal/core-recommended 10.0.0-alpha1 requires drupal/core 10.0.0-alpha1 -> found
drupal/core[10.0.0-alpha1] but these were not loaded, likely because it conflicts with
another require.
```

Backwards compatible fixes

Backwards compatible fixes

Patches that work during the Drupal 10 lifecycle

- Patches should be backwards compatible
- Rector can do this, but we need to develop this for Drupal
- Generate BC-compatible and breaking patches

Road to Drupal 11

Fully utilize Gitlab

Track deprecations

Backwards compatible fixes

Helping out

- Slack
  - #d10readiness / #d11readiness
  - #rector
  - #phpstan
- **Get all your modules released!**
- **Drupal 10 project adoption (#3342443)**

grazzi
Дзякуй
zikomo
tak
o seun
Спасибі
go raibh maith agat
paldies
ありがとう
takk fyri
na gode
dhanyawaad
obrigado
hvala
dank je wel
grazie
diolch yn fawr
lorem ipsum dolor
salamat
rahmat
tualumba
ahéhee
faleminderit
misaotra
xie xie
eskerrik asko
grazas
děkuji
ďakujem
dankie
merci
dankon
спасибо
благодаря
teşekkür ederim
dziękuję
asante
dank u
chezu ba
sağ ol
akeva
grazias
aitäh
ขอบคุณ
barka
gràcies
danke
mahalo
welálin
tack
thank you
kamsahamnida
balika
谢谢
gracias
matur nuwun
köszönöm
daalụ
хвала
waad ku mahadsan tahay
mauruuru
dhanyawaadh
terima kasih
trugéré
þakka þér
شکرا
miigwetch
cảm ơn bạn
σας ευχαριστώ
Շնորհակալություն
dhanyabaad
ngiyabonga
ju faleminderit
mèsi poutèt ou kiitos
ధన్యవాదాల
ви благодариме
баярлалаа
manana
তোমাকে ধন্যবাদ
mulțumesc
ačiū
დიდი მადლობა
tapadh leibh
ຂໍຂອບໃຈທ່ານ